


Christopher
Lichens/R9/USEPA/US
03/02/2004 10:36 AM

To "Perina, Tom/SBO" <Tom.Perina@ch2m.com>
cc
bcc
Subject Re: well installation cost estimate 

Tom,

Here is the scope that went out with the order.

Chris



omega RI field scope.wpd
"Perina, Tom/SBO" <Tom.Perina@ch2m.com>



"Perina, Tom/SBO"
<Tom.Perina@ch2m.com>
03/01/2004 06:55 PM

To: Christopher Lichens/R9/USEPA/US@EPA
cc:
Subject: well installation cost estimate

Hi Chris,

attached is the cost estimate for the OU-2 well installation. I did not want to send it before it was peer-reviewed.
Please let me know if you have any questions.

Regards,



Tom OU-2 well install cost est.doc

ATTACHMENT 1 TO ADMINISTRATIVE ORDER 2004-
0004

**STATEMENT OF WORK
REMEDIAL INVESTIGATION FIELD
ACTIVITIES**

**OMEGA CHEMICAL SUPERFUND SITE
OPERABLE UNIT TWO**

WHITTIER, CALIFORNIA

January 2, 2004

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STATEMENT OF WORK

OMEGA CHEMICAL SUPERFUND SITE

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INTRODUCTION

Respondents shall conduct defined elements of a Remedial Investigation ("the project") in accordance with the Administrative Order for Remedial Investigation, Docket 2004-0004 ("the Order"), this Statement of Work, and relevant EPA guidance. The major tasks and deliverables required by the Order are: 1) Selecting a Contractor; 2) Project Planning; 3) Groundwater Monitoring Well Installation; 4) Aquifer Testing; 5) Quarterly Monitoring; and 6) Project Completion Report. If EPA concludes that additional work is needed after implementation of the approved Work Plan, EPA may require Respondents to submit an addendum to the approved Work Plan or a new Work Plan. All project planning documents must be approved by EPA prior to the initiation of field activities. Respondents shall furnish all necessary personnel, materials, and services needed, or incidental to, performing the RI, except as otherwise specified in the Order.

EPA will be responsible for oversight of the Respondents' activities throughout the project. EPA contractors may assist EPA in providing field oversight.

1 PURPOSE

Respondents shall conduct RI activities at the Omega Chemical Superfund Site and develop the data necessary to support the selection of a site remedy that will eliminate, reduce, or control risks to human health and the environment. This SOW sets forth the framework and requirements for this effort.

2 GENERAL REQUIREMENTS

The respondents shall conduct RI activities in accordance with this SOW and relevant EPA guidance documents. Activity-specific guidance documents are listed in the text of this SOW and more general or multi-task guidance documents are listed in Attachment 1. In all cases the respondents shall use the most recently issued guidance.

Within 21 days of the effective date of the Order, the respondents shall designate a Project Coordinator to report directly to the RPM. The Project Coordinator is responsible for ensuring that the SOW is implemented according to the terms of the order and that all performance standards are met.

The respondents shall communicate at least weekly with the EPA Remedial Project Manager (RPM), in face-to-face meetings, through conference calls, or by email. The respondents shall document all decisions that are made in meetings and conversations with EPA and forward this documentation to the RPM within two working days of the meeting or conversation.

The respondents shall furnish all necessary personnel, equipment, materials, and services needed

for, or incidental to, performing and completing this SOW. The respondents shall maintain all technical records in accordance with this SOW. During the period the respondents are completing the SOW activities, the respondents shall submit to the RPM two hardcopy (and/or electronically if directed to do so by the RPM) of each technical memorandum, data summary, or other document produced pursuant to this SOW.

EPA will review deliverables prepared through implementation of this SOW. However, acceptance of documents by EPA does not relieve the respondents of responsibility for the technical quality and reliability of these documents.

3 REQUIRED TASKS AND SUBMITTALS

3.1 Task 1: Contractor Selection

Within 30 days of the effective date of this order, respondents shall submit to EPA the name and qualifications of an environmental contractor to perform the work required under this order. The proposed contractor must demonstrate experience with at least three projects of similar scope and magnitude within the last three years. Project summaries, including a narrative description of the activities performed, project team personnel, project start and end dates, dollar value, and client references shall be submitted to EPA. Resumes of proposed contractor personnel shall also be provided and demonstrate experience relevant to this SOW.

3.2 Task 2: Project Planning

Work Plan

Within 45 days of EPA approval of the contractor, Respondents shall submit to EPA a complete RI work plan, including a description and schedule for completing all field activities and follow-up reports. If EPA disapproves of or requires revisions to the RI work plan, in whole or in part, Respondents shall amend and submit to EPA a revised work plan which is responsive to the directions in all EPA comments. Unless EPA agrees otherwise, the Work Plan should include the following elements:

- a brief description of the Site, including its location, past and current site activities, and any significant ecological, cultural or natural resource features;
- a description of the roles and responsibilities of organizations and key personnel involved in the the project, including lines of authority;
- a summary of existing information on the hydrogeology of the site area, including subsurface stratigraphy, a description of the aquifer system, and influences on and temporal variation in groundwater elevations and flow;
- a summary of existing information on groundwater quality at and in the vicinity of the Site, including the nature, extent, and movement of contaminants in the groundwater, and an assessment of the quality and usefulness of existing data;
- a description of planned groundwater investigation activities, including a preliminary estimate of the number, location, depth, and construction of

- groundwater monitoring wells;
- the rationale for proposed groundwater monitoring well locations and screen intervals, in relation to potential source areas, groundwater elevations and flow direction, and aquifer structure;
- plans for securing property and/or access agreements and satisfying permit requirements;
- a description of tasks to be performed and work products that will be submitted, including a detailed outline of the Project Completion Report;
- provisions for weekly reporting to EPA by fax or email during implementation of field activities;
- a schedule for each task and deliverable, including all field work and submittal of a draft Project Completion Report;
- the estimated cost of implementing the Work.

Sampling and Analysis Plan

Within 45 days of EPA approval of the RI work plan, Respondents shall submit to EPA a sampling and analysis plan (SAP). The SAP shall consist of a field sampling plan (FSP) and a quality assurance project plan (QAPP), as described in EPA guidance documents, including, without limitation, "EPA Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA/600/R-98/018, February 1998), and "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" (epa 240/b-01/003, March 2001). If EPA disapproves of or requires revisions to the SAP, in whole or in part, Respondents shall amend and submit to EPA a revised SAP which is responsive to the directions in all EPA comments. The FSP shall be written so that a field sampling team unfamiliar with the site would be able to gather the samples and field information required.

The FSP should define in detail the sampling and data-gathering methods that will be used on the project. Unless EPA agrees otherwise, it should include: descriptions of sampling objectives; sample locations and frequencies; numbers and types of samples (including QC samples); sampling equipment and equipment decontamination procedures; sampling and data collection methods; sample labeling; sample packaging and shipment; sample analysis; well construction; well development procedures; management of drill cuttings, well development water, purge water produced during sampling, and other investigation-derived wastes; field documentation requirements; and planned uses of the data.

Respondents should be prepared to demonstrate to EPA's satisfaction that each laboratory it may use is qualified to conduct the proposed work. This includes use of methods and analytical protocols for the chemicals of concern in the media of interest within detection and quantification limits consistent with both QA/QC procedures and DQOs in the approved QAPP for the site. The laboratory must have and follow an approved QA program. Respondents should only use laboratories which have a documented Quality Assurance Program which complies with ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995) and "EPA Requirements for Quality Management Plans (QA/R-2)"

(EPA/240/B-01-002, March 2001) or equivalent documentation as determined by EPA. EPA may consider laboratories accredited under the National Environmental Laboratory Accreditation Program ("NELAP") as meeting the Quality System requirements. If the laboratory is not in the CLP program, a laboratory QA program must be submitted for EPA review and approval. EPA may require that Respondents submit detailed information to demonstrate that the laboratory is qualified to conduct the work, including information on personnel qualifications, equipment and material specifications. Respondents will provide assurances that EPA has access to laboratory personnel, equipment and records, sample collection, transportation and analysis.

The FSP shall also specify locations for monitoring well placement. The placement of the wells shall address existing data gaps, namely the southwestern (downgradient), northwestern (lateral), and southern (lateral) extent of the plume, and the concentration distribution within the western portion of the plume where contaminant concentrations were found at greater depth than near the source area. A minimum of two well locations will be required in each of these four areas. Unless an alternate approach can be justified, all monitoring wells shall be constructed as three-well clusters to delineate the vertical extent of contamination and the distribution of piezometric levels in the aquifer zones. Three-well clusters will consist of adjacent wells screened at three depths, or a single well with three separate screened intervals.

The QAPP should describe the project objectives and organization, functional activities, data quality objectives (DQOs), and quality assurance and quality control (QA/QC) protocols that will be used to achieve the desired DQOs. The DQOs shall, at a minimum, reflect use of analytical methods for obtaining data of sufficient quality to meet National Contingency Plan requirements as identified at 40 CFR 300 et. seq. In addition, the QAPP should address sample custody, analytical procedures, data reduction, data validation procedures to ensure that reported data are accurate and defensible, personnel qualifications, data management, procedures that will be used to enter, store, correct, manipulate, and analyze data; protocols for transferring data to EPA in electronic format; document control procedures, and preservation of records (in accordance with the Order).

Health and Safety Plan

Within 45 days of EPA's approval of the RI work plan, Respondents shall prepare and submit a Health and Safety Plan in conformance with the Respondents' health and safety program, and in compliance with OSHA regulations and protocols. The Health and Safety Plan should address or provide employee training, a health and safety risk analysis, a description of monitoring and personnel protective equipment, medical monitoring, standard operating procedures, contingency plans, and site control. The Health and Safety Plan is not subject to EPA approval; however, EPA will review the Plan to ensure that all necessary elements are included, and that the Plan provides for the protection of human health and the environment.

Community Relations

EPA will prepare a community relations plan, in accordance with EPA guidance and the NCP. Respondents shall provide information supporting EPA's community relations programs as

needed and requested by EPA.

3.3 Task 3: Groundwater Monitoring Well Installation

Within 90 days of EPA's approval of the SAP, the Respondents shall install, and sample groundwater monitoring wells as described in the SAP.

All wells shall be constructed in conformance with California Well Standards (Department of Water Resources Bulletin 74-90, 1991) and with requirements of permitting agencies. All wells shall be constructed with minimum four-inch diameter casing and screen, using appropriately graded filter pack and a minimum three-foot seal. The annular space to the surface should be filled with neat cement and five percent bentonite grout or similar material. All wells shall be developed by a combination of surging, bailing, and pumping. General water quality parameters including pH, temperature, specific conductance, and turbidity shall be monitored during pumping. Development should continue until at least ten casing volumes of water have been removed, water quality parameters are stable, and turbidity approaches 5 NTU. The monitoring wells should be equipped with dedicated (preferably stainless steel) bladder pumps to allow for low-flow sampling. Surface completions shall include flush-mount, traffic-rated well vaults set in concrete. Locks shall be installed on each well to prevent unauthorized access.

All required permits for installation of wells shall be obtained and copies of each permit sent to EPA within one week of issuance. Any difficulty or delays in obtaining permits shall be reported to EPA as soon as possible. Wells within City of Whittier and County of Los Angeles rights-of-way (ROW) may be placed in the street. Wells within City of Santa Fe Springs ROW must be placed in parkway areas. Excavation/encroachment permits from the municipal and County entities must be obtained, as required, in addition to well permits from the County of Los Angeles Department of Environmental Health. In addition, copies of City and County inspections and approvals of work shall be sent to EPA within one week of issuance. The Respondents shall verify and follow all applicable permitting requirements.

Field reports shall be submitted to EPA on a weekly basis. All reports must be signed by the field manager responsible for field oversight of construction. The reports shall document all activities completed and correlate progress to date with the required construction schedule. The report shall also identify significant problems encountered during the construction work and clearly describe changes made to the design made in the field. All change orders which impact the approved design (including equipment, materials, configuration) shall be reported to EPA even if the cost and schedule are not impacted. The Respondent may submit daily field reports in lieu of summarizing weekly field activities; however, a written narrative summarizing the additional, required information must be included in the report (i.e., progress, change orders, problems arising in the field, etc.).

The final approved monitoring well construction drawings shall be updated to reflect all changes

made during construction regardless of whether or not the changes were made with formal change order documents or were no-cost or no-time substitutions. The Respondents may either update the final approved design with all changes made during construction or may clearly modify the final approved documents to indicate changes made in the field by adding the applicable detail drawings, layout diagrams, etc. In addition, the submittal shall clearly describe all equipment and/or material changes or substitutions that were made during construction. A "redline" or "mark-up" set made in the field will not be accepted as a satisfactory submittal. The submittal shall be re-stamped by a licensed/registered professional (e.g., Professional Engineer or California Registered Geologist). All modifications to the approved design shall be submitted to EPA within 30 days of completing construction.

3.4 Task 4: Aquifer Testing

Within 120 days of EPA's approval of the work plan, the Respondents shall prepare an aquifer testing plan (ATP) to ensure that the aquifer testing is conducted in accordance with EPA guidance, technically acceptable protocols, and the Data Quality Objectives. The ATP will define in detail the test objectives, procedures, locations, and equipment; sampling and analytical procedures as previously described in the SAP; and water treatment and/or disposal methods. The ATP will be written such that an experienced team unfamiliar with the site would be able to gather information to conduct the aquifer tests and collect the appropriate field data and information required. The test protocol shall be such that the collected data can be analyzed using established aquifer test analysis methods in accordance with EPA guidance. The ATP must be approved by EPA before aquifer testing begins. Respondents shall conduct aquifer pump tests within 30 days of EPA's approval of the ATP. The results of aquifer testing, including all data and a description of field activities, shall be submitted to EPA within 30 days of completion of field work.

Within 30 days of EPA's approval of the ATP, the Respondents will conduct a series of aquifer tests to determine the hydraulic properties of the principal contaminated water-bearing hydrogeologic units. The purpose of aquifer testing is to define the hydraulic properties of the principal water-bearing zone(s) and; evaluate the aquifer yield potential within the contaminated zone. The aquifer testing will consist of pumping tests at Santa Fe Springs Well Number One and at a new extraction well, and slug testing of all new and existing wells.

Santa Fe Springs Well Number One

The Respondents shall conduct a pumping test at Santa Fe Springs Well Number One (SFS-1) to determine the hydraulic properties of the principal hydrogeologic units and their continuity. The test will also identify potential contaminant transport pathways toward the well.

The test will be conducted as constant-flowrate and its duration will be at least 72 hours. Water levels in the pumping well and selected monitoring wells and barometric pressure will be monitored using pressure transducers attached to data loggers. The effects of pumping SFS-1 are expected to be measurable at relatively great distances from the well. The Respondents shall select existing monitoring wells as observation points to assure complete coverage of the zone

affected by the pumping. Water levels and barometric pressure shall be monitored for at least 72 hours prior to the test, during the test, and for at least 72 hours after completion of the test. The discharge rate will also be monitored and recorded continuously during the pump test. It is anticipated that the extracted groundwater will be used in the water distribution system and that there will be no treatment and discharge requirement. The Respondents shall collect, or arrange for collection of a sample of the extracted water; the sample shall be analyzed for constituents specified in Task 5 of this scope of work. The Respondents shall coordinate the test procedures (such as access, and starting and stopping the well pump) with the owners/operators of SFS-1. The Respondents shall gather production data from the well owners/operators and determine the appropriate flowrate for the test. It is desirable to discontinue the well production prior to the test and allow the head in the aquifer(s) to reach equilibrium. If this is not feasible, an alternate test protocol shall be considered. The alternate test protocol may include, for example, imposing a step-change in the production rate for 72 hours. The test protocol shall be subject to EPA approval.

New Extraction Well

The Respondents shall install a new extraction well in the vicinity of the MW08 well cluster and conduct an aquifer pumping test at the new extraction well. The test will consist of an initial step drawdown test to determine optimal pumping rate for the full pumping test, and a 72-hour constant flowrate test to define the hydraulic properties of the aquifer.

The new extraction well will be constructed with 6-inch casing and screen and screened between 65 and 85 feet bgs to approximate the second saturated sand interval screened in MW08B, MW08C, and MW08D. The Respondents shall select existing monitoring wells as observation points to assure a complete coverage of the zone affected by the pumping. Water levels in the pumping and observation wells and barometric pressure will be monitored using pressure transducers attached to data loggers. Water levels and barometric pressure shall be monitored for at least 72 hours prior to the tests, during the tests, and for at least 72 hours after the completion of the tests. The discharge rate will also be monitored and recorded continuously during the pumping tests. Water from the pumping tests will be treated by carbon adsorption and/or other applicable water treatment technologies and disposed as required by law.

Short-term constant-rate pumping tests shall be conducted at a minimum of one new well cluster in the vicinity of the leading edge of the plume. The tests shall be conducted consecutively on all (anticipated three) wells within the cluster. The test duration of approximately four hours of pumping shall be followed by complete recovery to pre-pumping heads. The tests may be conducted in a step-wise fashion if necessary. Water levels in all wells of the cluster, as well as barometric pressure, shall be monitored using pressure transducers and a data logger. Flowrate shall be measured at least every 15 minutes. Water levels and barometric pressure shall be monitored for 72 hours prior to the test and for at least 24 hours after the test.

Slug Tests

Slug tests shall be conducted on all existing EPA wells, OPOG wells, and wells installed through

implementation of this SOW to evaluate the distribution of hydraulic conductivity in the water-bearing zones. Slug testing will be conducted by measuring the recovery of head in a well after a near-instantaneous change in head at that well. The initial change in water level can be induced either by an introduction of a solid object (e.g., solid slug rod) and/or by air-pressurizing the well casing. A minimum of two tests shall be conducted at each well (if solid slug is used, both slug-in and slug-out tests shall be conducted); if the test well response extremely slow, one test may be conducted. Multiple tests using different initial displacement shall be conducted at rapidly responding wells. The head change shall be recorded continuously using a pressure transducer attached to a data logger.

3.5 Task 5: Quarterly Monitoring

EPA groundwater monitoring wells shall be sampled on a quarterly basis (February, May, August, and November) until EPA issues written notice to Respondents to discontinue sampling events. EPA wells are designated "MW" followed by a number in Attachment 2 of this SOW. EPA shall be notified at least 30 days in advance of each sampling event. The existing EPA wells are equipped with dedicated bladder pumps that allow sampling using low-flow techniques. Each well shall be purged at approximately 0.1 gallons per minute (gpm) for at least 30 minutes, and the purge water shall be monitored for pH, temperature, specific conductance, dissolved oxygen, and oxidation-reduction potential using a flow-through cell at approximately three-minute intervals. The groundwater samples shall be collected after three consecutive readings show variation of the monitored parameters of less than 5%. The new groundwater monitoring wells installed under this order shall be sampled during the same quarterly events.

The Omega Chemical Company Superfund Site Organized PRP Group (OPOG) monitors ten wells on a semi-annual basis (February and August). OPOG wells are designated "OW" followed by a number in Attachment 2 of this SOW. The Respondents shall be responsible for sampling and analysis of the OPOG wells on the alternate quarters (May and November) during the quarterly sampling events required under this order. Each sampling event shall also include collection of water level data from all OPOG and EPA wells within one 12-hour period, before sampling occurs; during the February and August events, this will require coordination with OPOG. The OPOG wells must be purged of three casing and gravel pack volumes before collecting samples, using a submersible pump. During each purge, water quality parameters shall be monitored including pH, temperature, specific conductance, and turbidity. All purge water shall be containerized and disposed at an offsite facility as required by law. All maintenance and repair/replacement of monitoring wells and ancillary equipment during the sampling events shall be the responsibility of the Respondents.

All groundwater samples shall be analyzed, at a minimum, for VOCs by EPA/SW836 Method 8260B; for perchlorate by EPA Method 314; for dissolved metals by EPA Method 200.7, 200.8, and SOP 507; for hexavalent chromium by EPA Method 218.6; for cyanide by EPA Method 335.2; for NDMA by EPA Method 1625M; and for parameters (such as nitrogen, sulfates, total organic carbon) used to assess natural attenuation of the contaminants. Practical Quantitation Limits should be no higher than the lowest of the following: EPA Maximum Contaminant Level

(EPA-MCL), California Maximum Contaminant Level (CA-MCL), California Action Level (AL). If there is no EPA-MCL, CA-MCL, or AL available for an analyte, the Practical Quantitation Limit for the analyte should be no higher than the EPA Preliminary Remediation Goal (PRG) for the Tap Water exposure pathway. PRGs are available on the EPA Region 9 website at: <http://www.epa.gov/region09/waste/sfund/prg/files/02table.pdf>

Sampling reports, including a description of field activities and all data, shall be submitted to EPA within 30 days of the sampling event.

3.6 Task 6: Project Completion Report

The respondents shall prepare a final report that presents all data and establishes site characteristics such as extent of contamination and the physical boundaries of contamination. At a minimum, elements of the completion report shall include the following:

- **Introduction.** Purpose of the report, site background, and report organization.
- **Study Area Investigation.** Summary of field activities, including previous technical memoranda/weekly reports.
- **Physical Characteristics of the Study Area.** Based on the results of field activities, discuss surface features, geology, soils, and hydrogeology of the study area.
- **Nature and Extent of Contamination.** Results of groundwater monitoring data, including contaminants of concern, vertical and lateral extent of contamination.
- **Contaminant Fate and Transport.** Potential routes of migration, contaminant persistence, and contaminant migration.
- **Summary and Conclusions.** Summarize nature and extent of contamination, and contaminant fate and transport. Discuss any limitations regarding use of the data.

Within 30 days of completing aquifer testing field activities and before beginning the project completion report, the respondents shall provide a detailed report outline for EPA review and approval. The draft report shall be submitted to EPA within 45 days of EPA's approval of the outline.

Attachment 1

EPA Guidance Documents

The Respondents shall perform all activities in accordance with EPA guidance, including but not limited to the following:

- CERCLA Compliance with Other Laws Manual, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (DRAFT), OSWER Directive No. 9234.1-01 and -02.
- Community Relations in Superfund — A Handbook, U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.
- Data Quality Objectives for Remedial Response Activities, U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.
- Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive NO. 9355.3-01.
- National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, Federal Register 40 CFR Part 300, March 8, 1990.
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute of Occupational Safety and Health/Occupational Health and Safety Administration/United States Coast Guard/Environmental Protection Agency, October 1985.
- A Compendium of Superfund Field Operations Methods, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.
- Guide to Management of Investigation-Derived Wastes, U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9345.3-03FS, January 1992.
- Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, February 19, 1992, OSWER Directive 9355.7-03.

Attachment 2

Existing Groundwater Monitoring Well Locations and Construction Summary